

REMARKS

By the present Amendment, Applicant has amended independent Claims 1 and 44 so that they, and the claims dependent therefrom, are patentable over references discovered during prosecution of related Patent Application Serial No. 09/690,660.

The Present Invention

The present invention provides a composite structure. The composite structure has two outer polymeric layers spaced apart from each other, with a cavity defined therebetween. A foam core is located between the two polymeric layers, and is made from a material capable of exhibiting a foam character and a resinous character. The composite structure also includes a fibrous layer located between one of the polymeric layers and the foam core. The core material has a resinous character where it has impregnated the fibrous layer, and between the fibrous layer and the polymeric layer, thereby causing the fibrous layer to adhere to the polymeric layer. The core has a foamed character on the other side of the fibrous layer. The fibrous layer includes a plurality of fibrous tow bundles, with each tow bundle capable of moving laterally a distance within a range of approximately one to two times a width of the bundle.

The method of making the composite structure includes the steps of providing the two outer polymeric layers between the opposing mold surfaces, providing the fibrous layer between the two polymeric layers, evacuating the cavity, introducing the core material into the cavity, with the core material being in a resinous state, activating a blowing agent to convert the core material from a resinous character to a foamed character, filling the cavity with the foamed core material, thereby bringing the core material into contact with the fibrous layer. Once the core material contacts the fibrous layer, that portion of the core material is converted to a substantially resinous character, creating a relatively dense resinous interface between the fibrous layer and foamed core material. A catalytic reaction is initiated within the foamed core material to cure the foamed core material. A negative pressure gradient is created in the direction from the foamed core material towards the fibrous layer, thereby causing the resinous core material to penetrate the fibrous layer and substantially fill the space between the fibrous layer and polymeric layer with resinous core material. This resinous core material is then also cured.

The distance between the bundles resulting from the method of making

the composite material optimizes both penetration of the fibrous layer by the resinous core, and the reinforcement of the material provided by the fibrous layer.

References Discovered During Prosecution of Related Patent Application

During prosecution of related Patent Application No. 09/690,660, the Examiner cited U.S. Patent No. 5,851,457 (Peterson et al.), U.S. Patent No. 4,351,873 (Davis), and European Patent Application No. EP 0307290. The Examiner informed the Applicant that Peterson and the European Patent Application both show the hermetic seal recited in Claim 33 of the Application Serial No. 09/690,660. This hermetic seal is recited in claims 1 and 44 of Application Serial No. 09/981,083.

The three additional references discovered by the Examiner during prosecution of the '660 application are not in the prosecution history of the '083 application. Therefore, the Examiner did not consider these additional references.

Amendments to Overcome the New References

Applicant has amended Claim 1 to include the additional recitation that the fibrous layer between the at least two outer polymeric layers is a directional fabric comprising a plurality of generally parallel fibrous toe bundles, and a predetermined stitching connecting together the toe bundles and allowing each bundle to move laterally a distance within a range of about one to two times a width of a bundle. None of the art of record teaches or suggests this recitation, and this recitation resulted in allowance of independent Claim 1 of the '660 patent application.

Furthermore, Applicant has amended Claim 44 to include the additional recitation of a gate defined within one of the polymeric sheets, along with means for sealing the gate. None of the art of record teaches or suggests this recitation, and this recitation resulted in allowance of independent Claim 32 of the '660 patent application.

Applicant is additionally submitting herewith an Information Disclosure Statement including copies of the relevant references (including Canadian Pat. No. 1,319,234, which is an English language equivalent to the European patent application), a Request for Continued Examination and authorization to charge the

Deposit Account No. 02-2556 of Eckert Seamans Cherin & Mellott, LLC, the amount of \$750.00 to cover the fee for the Request for Continued Examination, and the \$130.00 Petition fee. The USPTO is hereby authorized to charge any additional fee or credit any overpayment to this deposit account.

CONCLUSION

For the above reasons, it is respectfully submitted that this Amendment now makes independent Claim 1, claims 2-43 dependent therefrom, independent Claim 44, and claims 45-57 dependent therefrom, patentable over the art of record.

Respectfully submitted,

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